

CLAIMS

What is claimed is:

1. Method to skew or deskew a plurality of optical channels in a multi-channel optical cable, comprising:

determining an optical pulse transmission time in at least a first channel and a second channel of the multi-channel optical cable;

calculating a relative pulse delay between the first channel and the second channel of the multi-channel optical cable;

adjusting the optical pulse transmission time by one of serially optically connecting delay optics with the appropriate relative pulse delay to at least one of the channels or removing a calculated material length from one of the channels to one of skew or deskew the first channel relative to the second channel.

2. Method of claim 1, wherein the delay optics comprise a delay optical waveguide with a selected delay time.

3. Method of claim 2, wherein the multi-channel optical cable has at least three channels, the optical pulse transmission time in each of the channels of the multi-channel optical cable is determined, the relative pulse delay between each of the channels relative to a slowest channel is calculated and mapped, and the delay optical waveguide with the selected delay time is serially optically connected to each of the respective channels to deskew the channels relative to one another.

4. Method of claim 3, wherein the delay time of the delay optical waveguide for each channel is provided by at least one of an increased core material index of refraction and a determined length of the delay optical waveguide which is separately adjusted for each of the channels being adjusted according to the formula $L_d = t_d * C/n_d$.

5. Method of claim 4, further comprising providing a plurality of pre-calibrated delay optical waveguides having different delay times, and selecting a delay optical waveguide for each of the channels to be adjusted based on the relative pulse delay mapping.

6. Method of claim 3, wherein the deskewed multi-channel optical cable has a length of approximately 100 meters or greater, and an optical skew of less than 100 picoseconds

7. Method of claim 2, wherein the delay optical waveguide is connected on an input or output end of the at least one of the channels.

8. Method of claim 1, wherein the calculated material length for removal is determined by the formula $L_r = t_d * C/n$.